

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2005-20850; Directorate Identifier 2005-NE-05-AD; Amendment 39-14297; AD 2005-20-04]

RIN 2120-AA64

Airworthiness Directives; Teledyne Continental Motors GTSIO-520 Series Reciprocating Engines

AGENCY: Federal Aviation Administration (FAA), Department of Transportation (DOT).

ACTION: Final rule.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for Teledyne Continental Motors (TCM) GTSIO-520 series reciprocating engines. This AD requires initial and repetitive visual inspections of the starter adapter assembly and crankshaft gear. This AD also requires unscheduled visual inspections of the starter adapter assembly and crankshaft gear due to a rough-running engine. This AD also requires replacement of the starter adapter shaft gear needle bearing with a certain bushing. Also, this AD requires installation of a certain TCM service kit at the next engine overhaul, or at the next starter adapter replacement, whichever occurs first. This AD results from six service difficulty reports and one fatal accident report received related to failed starter adapter assemblies. We are issuing this AD to prevent failure of the starter adapter assembly and or crankshaft gear, resulting in failure of the engine and possible forced landing.

DATES: This AD becomes effective November 1, 2005. The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulations as of November 1, 2005.

ADDRESSES: You can get the service information identified in this AD from Teledyne Continental Motors, Inc., PO Box 90, Mobile, AL 36601; telephone (251) 438-3411. For the Teledyne Continental Motors Web site: Go to <http://www.TCMLINK.com>.

You may examine the AD docket on the Internet at <http://dms.dot.gov>. or in Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Jerry Robinette, Senior Engineer, Propulsion, Atlanta Aircraft Certification Office, FAA, Small Airplane Directorate, One Crown Center, 1895 Phoenix Blvd., Suite 450, Atlanta, GA 30349; telephone: (770) 703-6096, fax: (770) 703-6097.

SUPPLEMENTARY INFORMATION: The FAA proposed to amend 14 CFR part 39 with a proposed airworthiness directive (AD). The proposed AD applies to TCM GTSIO-520 series reciprocating engines. We published the proposed AD in the Federal Register on January 13, 2005 (70 FR 2333). That action proposed to require:

- Before further flight, adding a placard to the instrument panel within view of the pilot that states, in 1/4 inch-high or higher characters, "In accordance with AD (number to be provided), the pilot must report a rough-running engine that cannot be cleared by adjustment of the engine controls; particularly the fuel mixture setting, to maintenance personnel, immediately after landing."
- Initial and repetitive visual inspections of the starter adapter assembly and crankshaft gear, and replacement of components as necessary.
- Unscheduled visual inspections of the starter adapter assembly and crankshaft gear due to a rough-running engine, and replacement of components as necessary.
- Replacement of the starter adapter shaft gear needle bearing, P/N 537721 with bushing, P/N 654472.
- Installation of TCM service kit, P/N EQ6642R, at next engine overhaul, or at next starter adapter replacement, whichever occurs first.

Examining the AD Docket

You may examine the docket that contains the AD, any comments received, and any final disposition in person at the Docket Management Facility Docket Offices between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The Docket Office (telephone (800) 647-5227) is located on the plaza level of the Department of Transportation Nassif Building at the street address stated in ADDRESSES. Comments will be available in the AD docket shortly after the DMS receives them.

Comments

We provided the public the opportunity to participate in the development of this AD. We have considered the comments received.

Request To Delete Requirement for a Placard

Two commenters request that we delete the requirement for a placard in the cockpit. The placard would state that the pilot must report a rough-running engine that cannot be cleared by adjustment of the engine controls; particularly the fuel mixture setting, to maintenance personnel, immediately after landing. The commenters state that the placard provides no useful in-flight information. One of the commenters states that there is no chance that the commenter would depart with a rough running engine. We agree that the placard provides no useful in-flight information. Therefore, we have removed the placard requirement from the AD.

Parts Costs in the NPRM Are Underestimated

One commenter states that the parts costs in the NPRM are underestimated and are actually much higher. We disagree. However, we found that TCM agreed to reduce the prices for these parts. The price for the TCM service kit, P/N EQ6642R is reduced from \$2,477 to \$1,858, and the price for the bushing is reduced from \$105 to \$53.

Revised Mandatory Service Bulletin

The proposed AD referenced TCM Mandatory Service Bulletin (MSB) No. MSB94-4E, dated January 24, 2005. Since we issued the NPRM, TCM revised that bulletin. This AD references the revised SB, TCM MSB No. MSB94-4F, dated July 5, 2005.

Conclusion

We carefully reviewed the available data, including the comments received, and determined that air safety and the public interest require adopting the AD with the changes described previously. We determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

Costs of Compliance

About 5,300 TCM GTSIO-520 series reciprocating engines of the affected design are in the worldwide fleet. We estimate that 4,240 engines installed on airplanes of U.S. registry will be affected by this AD. We also estimate that it will take about one work hour per engine to perform one of the inspections, and about one work hour per engine to perform the bushing installation. We also estimate that it will take about six work hours per engine to install TCM service kit, P/N EQ6642R. The average labor rate is \$65 per work hour. We estimate that about 25% (1,060) of the engines will require an unscheduled (rough-running engine) inspection, that each engine has eight 100-hour inspections per year, and two 400-hour inspections per year. We also estimate that about 50% (2,120) of the engines will require the bushing installed and TCM service kit, P/N EQ6642R installed. Required bushings will cost about \$53 per engine and required service kits will cost about \$1,858 per engine. Based on these figures, we estimate the total cost of the AD to U.S. operators to be \$7,840,820.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII, Aviation Programs, describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in subtitle VII, part A, subpart III, section 44701, "General requirements." Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We have determined that this AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the National Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866;

(2) Is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

We prepared a summary of the costs to comply with this AD and placed it in the AD Docket. You may get a copy of this summary at the address listed under ADDRESSES.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, under the authority delegated to me by the Administrator, the Federal Aviation Administration amends 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

AIRWORTHINESS DIRECTIVE



Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post ADs on the internet at www.faa.gov/aircraft/safety/alerts/

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

2005-20-04 Teledyne Continental Motors: Amendment 39-14297. Docket No. FAA-2005-20850; Directorate Identifier 2005-NE-05-AD.

Effective Date

- (a) This airworthiness directive (AD) becomes effective November 1, 2005.

Affected ADs

- (b) None.

Applicability

(c) This AD applies to Teledyne Continental Motors (TCM) GTSIO-520 series reciprocating engines. These engines are installed on, but not limited to, Twin Commander (formerly Aero Commander) model 685, Cessna model 404, 411 series, and 421 series, British Aerospace, Aircraft Group, Scottish Division model B.206 series 2 and Aeronautica Macchi, model AM-3 airplanes.

Unsafe Condition

(d) This AD results from six service difficulty reports and one fatal accident report received related to failed starter adapter assemblies. We are issuing this AD to prevent failure of the starter adapter assembly and or crankshaft gear, resulting in failure of the engine and possible forced landing.

Compliance

(e) You are responsible for having the actions required by this AD performed within the compliance times specified unless the actions have already been done.

Starter Adapter Shaft Gear Needle Bearing Replacement

(f) If, during an inspection required by paragraph (g), (h), (i), or (j) of this AD, you find needle bearing, part number (P/N) 537721, installed in the crankcase, replace it with bushing, P/N 654472, before reassembling components. Use the bushing installation procedure specified in Part 4 of TCM Mandatory Service Bulletin (MSB) No. MSB94-4F, dated July 5, 2005.

Unscheduled Inspections for Rough-Running Engines

(g) For any engine that experiences rough running conditions regardless of time-in-service (TIS), do the following:

(1) Before further flight, perform the inspection procedures specified in Part 1 and Part 3 of TCM MSB No. MSB94-4F, dated July 5, 2005, and replace components as necessary.

(2) An engine is considered rough-running if there is a sudden increase in the perceived vibration levels that cannot be cleared by adjustment of the engine controls; particularly the fuel mixture setting. Information on a rough running engines can be found in the aircraft manufacturer's Airplane Flight Manual, Pilot's Operating Handbook, or Aircraft Owners Manual.

100-Hour and Annual Inspections

(h) For any engine, at the next 100-hour or annual inspection, whichever occurs first, do the following:

(1) Perform the inspection procedures specified in Part 2 of TCM MSB No. MSB94-4F, dated July 5, 2005, and replace components as necessary.

(2) Thereafter, at each 100-hour inspection, (plus or minus 10 hours), and annual inspection, perform repetitive inspections and component replacements as specified in paragraph (h)(1) of this AD.

Starter Adapters With 400 Hours or More Time-In-Service (TIS) or Unknown TIS

(i) For any starter adapter with 400 hours or more TIS or unknown TIS on the effective date of this AD, do the following:

(1) Within 25 hours TIS, perform the inspection procedures specified in Part 3 of TCM MSB No. MSB94-4F, dated July 5, 2005, and replace components as necessary.

(2) Thereafter, at 400-hour TIS intervals, (plus or minus 10 hours), perform repetitive inspections and component replacements specified in Part 3 of TCM MSB No. MSB94-4F, dated July 5, 2005, and replace components as necessary.

Starter Adapters With Fewer Than 400 Hours TIS

(j) For any starter adapter with fewer than 400 hours TIS on the effective date of this AD, do the following:

(1) Upon accumulation of 400 hours TIS, (plus or minus 10 hours), perform the inspection procedures specified in Part 3 of TCM MSB No. MSB94-4F, dated July 5, 2005, and replace components as necessary.

(2) Thereafter, at 400-hour TIS intervals, (plus or minus 10 hours), perform repetitive inspections and component replacements, as specified in Part 3 of TCM MSB No. MSB94-4F, dated July 5, 2005, and replace components as necessary.

Installation of TCM Service Kit, EQ6642R

(k) At the next engine overhaul or starter adapter replacement after the effective date of this AD, whichever occurs first, do the following:

(1) Install TCM service kit, P/N EQ6642R. Use the service kit installation procedures specified in Part 5 of TCM MSB No. MSB94-4F, dated July 5, 2005.

(2) Continue performing the inspections and component replacements specified in paragraphs (g), (h), and (i) of this AD.

Prohibition of Special Flight Permits for Rough-Running Engines

(l) Special flight permits are prohibited for rough-running engines described in paragraph (g)(2) of this AD.

Alternative Methods of Compliance

(m) The Manager, Atlanta Aircraft Certification Office, has the authority to approve alternative methods of compliance for this AD if requested using the procedures found in 14 CFR 39.19.

Related Information

(n) European Aviation Safety Agency AD 2004-0006, dated December 15, 2004, also addresses the subject of this AD.

Material Incorporated by Reference

(o) You must use Teledyne Continental Motors Mandatory Service Bulletin No. MSB94-4F, dated July 5, 2005, to perform the actions required by this AD. The Director of the Federal Register approved the incorporation by reference of this service bulletin in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Contact Teledyne Continental Motors, Inc., PO Box 90, Mobile, AL 36601; telephone (251) 438-3411 for a copy of this service information. For the Teledyne Continental Motors Web site: Go to <http://www.TCMLINK.com>. You may review copies at the Docket Management Facility; U.S. Department of Transportation, 400 Seventh Street, SW., Nassif Building, Room PL-401, Washington, DC 20590-0001, on the Internet at <http://dms.dot.gov>, or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to: <http://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued in Burlington, Massachusetts, on September 20, 2005.

Francis A. Favara,

Acting Manager, Engine and Propeller Directorate, Aircraft Certification Service.

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